

ABSTRACT OF THE DISCLOSURE

Improved control of continuous processes that handle liquids. Data generated by this invention is used to control gas contents of liquids within optimum ranges, for instance in paper coating processes and in the manufacture of food products (ketchup), personal care products (shampoo), paints, and in any industry where information on entrained and/or dissolved gases, and related parameters such as true density of and gas solubility in process liquids, is employed to optimize processing. The amount of gas in a liquid is determined by subjecting a mixture of an incompressible liquid sample and a compressible gas to three or more different equilibrium pressure states, measuring the temperature and volume of the mixture at each of the pressure states, determining the changes in volume of the mixture between at least two different pairs of pressure states, and calculating the amount of gas in the liquid sample. The inventive apparatus includes: a reservoir for process fluid; piping through which fluid may be pumped, the piping being under the control of a pressure regulator which is capable of setting at least three different pressures P1, P2, and P3 in the apparatus; at least three fluid control valves V1, V2, and V3; a pressure gauge; a temperature gauge; and a density gauge.